(54) Title: METHOD AND APPARATUS FOR CONDITIONING WIRELESS TRANSMISSION OF MESSAGES
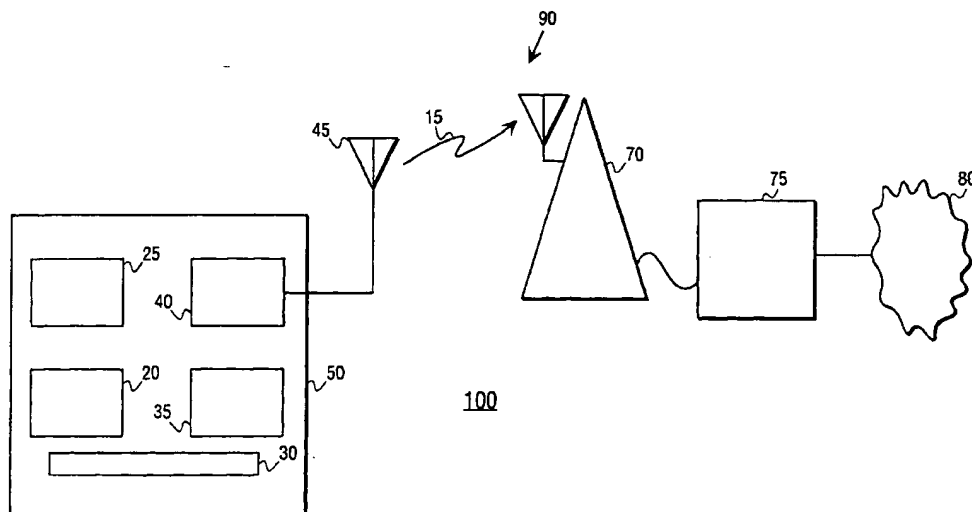
(57) Abstract: Briefly, in accordance with one embodiment of the invention, a portable communication device has a memory and a processor. The portable communication device may transmit a message upon the occurrence of a user defined event.

METHOD AND APPARATUS FOR CONDITIONING WIRELESS TRANSMISSION OF MESSAGES

BACKGROUND

5   Although current wireless communication systems (i.e. cellular

systems) do offer flexibility in that they allow a user to be mobile while

communicating, they still suffer from the limitation in that they operate in real-

time. For example, the user may communicate using the wireless

communication system only when the user is connected to the wireless

10   system with their portable communication device (i.e., cell phone). Thus,

delivery of content (e.g., messages, data, music, news, etc.) occurs in real-

time when the user is connected to the wireless communication system.

This may be disadvantageous if the user needs to transmit or receive

time sensitive information. For example, if the user wants to transmit a

15   message (e.g. a press release) at a certain time, then the use must wait until

that particular time, connect to the wireless communication system, and then

transmit the message.

Real-time delivery may also be disadvantageous if the user is roaming

throughout the wireless communication system such that characteristics such

20   as quality of service, level of service, transmission power level, cost, etc. are

changing. Consequently, the real-time delivery of content over a wireless

communication system may subject the user to the current transmission

characteristics. Thus, the user may not have the flexibility in determining

when a message will be transmitted to take advantage of lower transmission

cost, lower transmission power level, or better quality of service that may

occur in the future.

Thus, there is a continuing need for better ways to transmit messages

5   to and from a portable communication device

BRIEF DESCRIPTION OF THE DRAWINGS

The subject matter regarded as the invention is particularly pointed out

and distinctly claimed in the concluding portion of the specification. The

invention, however, both as to organization and method of operation, together

10   with objects, features, and advantages thereof, may best be understood by

reference to the following detailed description when read with the

accompanying drawings in which:

FIG. 1 is a schematic representation of a portable communication

device as it may operate to communicate with a wireless communication

15   system; and

FIG. 2 is a flow chart of a method of transmitting a message in

accordance with an embodiment of the present invention.

It will be appreciated that for simplicity and clarity of illustration,

20   elements illustrated in the figures have not necessarily been drawn to scale.

For example, the dimensions of some of the elements are exaggerated relative

to other elements for clarity. Further, where considered appropriate,

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reference numerals have been repeated among the figures to indicate

corresponding or analogous elements.

DETAILED DESCRIPTION

5   In the following detailed description, numerous specific details are set

forth in order to provide a thorough understanding of the invention. However,

it will be understood by those skilled in the art that the present invention may

be practiced without these specific details. In other instances, well-known

methods, procedures, components and circuits have not been described in

10   detail so as not to obscure the present invention.

Some portions of the detailed description that follows are presented in

terms of algorithms and symbolic representations of operations on data bits or

binary digital signals within a computer memory. These algorithmic

descriptions and representations may be the techniques used by those skilled

15   in the data processing arts to convey the substance of their work to others

skilled in the art.

Unless specifically stated otherwise, as apparent from the following

discussions, it is appreciated that throughout the specification discussions

utilizing terms such as "processing," "computing," "calculating,"

20   "determining," or the like, refer to the action and/or processes of a computer

or computing system, or similar electronic computing device, that manipulate

and/or transform data represented as physical, such as electronic, quantities

within the computing system's registers and/or memories into other data

similarly represented as physical quantities within the computing system's

memories, registers or other such information storage, transmission or display

devices.

5   Embodiments of the present invention may include apparatuses for

performing the operations herein. This apparatus may be specially

constructed for the desired purposes, or it may comprise a general purpose

computing device selectively activated or reconfigured by a program stored in

the device. Such a program may be stored on a storage medium, such as, but

10   is not limited to, any type of disk including floppy disks, optical disks, CD-

ROMs, magnetic-optical disks, read-only memories (ROMs), random access

memories (RAMs), electrically programmable read-only memories (EPROMs),

electrically erasable and programmable read only memories (EEPROMs),

magnetic or optical cards, or any other type of media suitable for storing

15   electronic instructions, and capable of being coupled to a system bus for a

computing device.

The processes and displays presented herein are not inherently related

to any particular computing device or other apparatus. Various general

purpose systems may be used with programs in accordance with the

20   teachings herein, or it may prove convenient to construct a more specialized

apparatus to perform the desired method. The desired structure for a variety

of these systems will appear from the description below. In addition,

embodiments of the present invention are not described with reference to any

particular programming language. It will be appreciated that a variety of programming languages may be used to implement the teachings of the invention as described herein.

In the following description and claims, the terms "coupled" and

5   "connected," along with their derivatives, may be used. It should be understood that these terms are not intended as synonyms for each other. Rather, in particular embodiments, "connected" may be used to indicate that two or more elements are in direct physical or electrical contact with each other. "Coupled" may mean that two or more elements are in direct physical or electrical contact.

10   However, "coupled" may also mean that two or more elements are not in direct contact with each other, but yet still co-operate or interact with each other.

It should be understood that embodiments of the present invention may be used in a variety of applications. Although the present invention is not limited in this respect, the techniques disclosed herein may be used in many apparatuses

15   such as in the transmitters and receivers of a radio system. Radio systems intended to be included within the scope of the present invention include, by way of example only, cellular radiotelephone communication systems, satellite communication systems, two-way radio communication systems, one-way pagers, two-way pagers, personal communication systems (PCS), personal digital

20   assistants (PDA's), wireless local area networks, and the like.

Types of cellular radiotelephone communication systems intended to be within the scope of the present invention include, although not limited to, Code Division Multiple Access (CDMA) cellular radiotelephone communication systems, Global System for Mobile Communications (GSM) cellular radiotelephone

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systems, North American Digital Cellular (NADC) cellular radiotelephone systems,

Time Division Multiple Access (TDMA) systems, Extended-TDMA (E-TDMA)

cellular radiotelephone systems, third generation (3G) systems like Wide-band

CDMA (WCDMA), CDMA-2000, and the like.

5   Turning to FIG. 1, an embodiment 100 in accordance with the present

invention is described. Embodiment 100 may comprise a portable communication

device 50 such as a mobile communication device (e.g., cell phone), a two-way

radio communication system, a one-way pager, a two-way pager, a personal

communication system (PCS), a portable computer, or the like. Although it

10   should be understood that the scope and application of the present invention is in

no way limited to these examples.

        Portable communication device 50 may include a processor 20, a display

25, an input/output (I/O) device 30 (e.g. a keypad or the like), memory 35, and a

transmitter 40 that may be connected to an antennae 45, although the scope of

15   the present invention is not limited to embodiments have any or all of these

components.

        As explained in more detail below, memory 25 may be used to store

messages transmitted to or by portable communication device 50. Memory 35

may also optionally be used to store instructions that are executed by processor

20   20 during the operation of portable communication device 50, and may be used to

store user data such as the conditions for when a message is to be transmitted by

portable communication device 50. Memory 35 may be provided my one or more

different types of memory. For example, memory 35 may be volatile memory (any

type of random access memory) or non-volatile memory, such as flash memory,

although the scope of the present invention is not limited in this respect.

In accordance with an embodiment of the present invention, I/O module 30 may be used by a user to generate a message. The message may be displayed with display 25 and stored in memory 35. The user may also indicate or define

5   the conditions for when the message may be transmitted. Thus, when processor 20 determines that the user defined condition or conditions has been met, portable communication device 50 may use transmitter 40 with antennae 45 to transmit the message to a wireless communication network 90 with a radio frequency (RF) signal (shown in FIG. 1 as an arrow 45). Note, portable

10   communication device 50 may use one of the communication protocols listed above to transmit the message. The scope of the present invention is not limited as to the type of system that receives the message. For example, wireless communication network may be a cellular network, a wireless local area network (WLAN), a Bluetooth™ piconet, etc.

15   The transmission may be received by an antennae 70 connected to a base station 75. Base station 75 may then transmit the message to a receive using the public switched telephone network (PSTN) 80. It should be understood that the scope of the present invention is not limited as to the type of device that receives the message from portable communication device 50. For example, the message

20   may ultimately be transmitted to a wired communication device or another portable communication device (not shown). It should also be understood that the scope of the present invention is not limited to embodiments where a message is sent from a portable communication device to a receiver over a wireless communication network. In alternative embodiments, a message may be

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transmitted from the wireless communication network to a portable
communication device (i.e., portable communication device 50).

Turning now to FIG. 2, a method in accordance with an embodiment of
the present invention is provided. This embodiment may begin with a user
5   generating a message to be sent, step 200. The message may comprise any
combination of voice, data, music, content, etc. The message may be
generated using an I/O device (e.g. I/O module 30 of FIG. 1) and stored in
memory within the portable communication device. It may desirable to
perform some processing on the message once it has been created. For
10   example, it may be desirable to encrypt or compress the message prior to it
being transmitted, although this additional processing should be considered
optional.

If the processing is to be performed, it may be desirable to postpone
the processing of the message if portable communication device 50 is being
15   powered by a battery. Instead, the compression, encryption, etc. may be
delayed until portable communication device 50 is connected to a stable
power supply (i.e., plugged into the wall). This may be desirable to save
power associated with the processing that would otherwise drain the battery
of portable device 50.

20   In generating the message, a user may also define the conditions under
which portable communication device 50 is to transmit the message, step
201. The user may specify a user defined event upon whose occurrence the
message is transmitted to wireless communication system 90 (see FIG. 1).

Although the scope of the present invention is not limited in this respect, one

example of a user defined event may include specifying a particular time

and/or date for when the message is to be transmitted. Thus, portable

communication device 50 may transmit the message when processor 50

5   detects that the time or date condition has been met. This may allow the

user to transmit time sensitive information in real-time, yet prepare the

message well in advance of its transmission.

Alternatively, portable communication device 50 may transmit the

message to wireless communication network 90 in real-time. However,

10   wireless communication network 90 may store or queue the message in

memory until the time and/or date condition specified by the user is met. In

other words, wireless communication network 90 may hold the message until

the date or time condition is met and then allow the message to be

transmitted to the intended receiver(s).

15   In alternative embodiments, the user may also define acceptable values

of other parameters as a user define event that triggers the transmission of

the message. For example, the user may specify an acceptable level of

quality of service or an acceptable level of security that must be achieved

before the message is sent. This may be desirable to provide a desired level

20   of quality or security for the transmission of the message. The user may also

specify an acceptable cost for transmitting the message or data rate such as

by specifying that transmission over a third generation (i.e. 3G) system or

particular second generation (i.e. 2G) systems is permissible. This may allow

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the user to generate the message and then take advantage of lower cost

transmission rates (i.e. off-peak fares).

In addition, the user may specify other characteristics of the

transmission to reduce the cost or power consumption associated with the

5   transmission. To reduce the amount of power consumption, and thus perhaps

increase the life of the battery, the user may specify an acceptable level of

transmission power for the transmitter in the portable communication device

(i.e. transmitter 40) or an acceptable distance between the portable

communication device and the base station to which it is transmitting.

10   Accordingly, the user may be able to extend the life of the battery of the

portable communication device by taking advantage of the possibility of

transmitting the message at a lower power level. This may be possible, for

example, if the user happens to be traveling towards the base station with

which it is in communication.

15   The user may also specify that the message is not to be sent until the

portable communication device is connected to a stable power supply. For

example, the user defined event may be the plugging of the portable

communication device into a re-charger or into the wall.

Although the scope of the present invention is not limited in this

20   respect both the message and the user defined event may be stored in the

memory with in the portable communication device (e.g. memory 35 of FIG.

1). It should also be understood that the scope of the present invention is not

limited to embodiments where the user defined event consists of a single

criteria. In alternative embodiments, the user defined event may comprise

more than one criteria such as all or any combination of those described

above. The user may also specify that different message may be sent if

particular sequence of user defined events occur. For example, one message

5   may be sent if one user defined event occurs, yet send another message if a

different user defined event occurs first. It should also be understood that a

user defined event may not be trigger upon the occurrence of a maximum or

minimum value. In alternative embodiments, the user may specify an

acceptable range of values or condition those values based on other

10   characteristics.

In alternative embodiments, the user may also specify other

characteristics for the message. For example, the user may specify to the

wireless communication network that the ringer on the receiver is not to be

activated with the message is sent. This may be desirable to allow the

15   content of the message to be sent to the receiver with disturbing the receiver.

This may be advantageous if the receiver is in another time zone or if the

information is not urgent.

The processor within the portable communication device (e.g.

processor 20) may then monitor the operation of the portable communication

20   device to determined if the user defined event has occurred, step 202. When

the user defined event has occurred, the message may be retrieved from

memory and transmitted to a wireless communication network (e.g. wireless

communication network 90) using transmitter 40 and antennae 45, step 203.

While certain features of the invention have been illustrated and

described herein, many modifications, substitutions, changes, and equivalents

will now occur to those skilled in the art. For example, embodiments of the

present invention may be used to delay or condition the transmission of a

5   message from a wireless communication network (i.e. a base station) to a

portable communication device. For example, a message may not be sent to

a portable communication device unless a condition defined by the user

occurs. It is, therefore, to be understood that the appended claims are

intended to cover all such modifications and changes as fall within the true

10   spirit of the invention.

Claims:

1. A method of transmitting a message from a portable communication device comprising:

preparing the message to be transmitted; and

5   transmitting the message from the portable communication device upon the occurrence of a user defined event.

2. The method of claim 1, wherein transmitting the message includes transmitting the message from the portable communication device to a base

10   station.

3. The method of claim 1, further comprising specifying the user defined event.

15   4. The method of claim 3, wherein specifying the user defined event includes specifying the date and time for transmission of the message.

5. The method of claim 3, wherein specifying the user defined event includes specifying an acceptable cost level at which the message is to be

20   sent.

6. The method of claim 3, wherein specifying the user defined event includes specifying an acceptable transmission power level at which the

message is to be sent.

7. The method of claim 3, wherein specifying the user defined event includes specifying an acceptable security level at which the message is to be

5   sent.

8. The method of claim 3, wherein specifying the user defined event includes specifying an acceptable distance from a base station at which the message is to be sent.

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9. The method of claim 1, further comprising compressing the message only when the portable communication device is coupled to a stable power supply.

15   10. The method of claim 1, wherein transmitting the message includes wirelessly transmitting the message to a receiver and disabling a ringing function of the receiver.

11. The method of claim 1, further comprising storing the message in

20   memory in the portable communication device.

12. The method of claim 11, wherein storing the message in memory includes storing the message in non-volatile memory.

13. A method of transmitting a message to a portable communication device comprising:

storing a message in memory;

defining a transmission condition for when the message is to be

5   transmitted

transmitting the message with a transmitter to the portable

communication device upon occurrence of the transmission condition.

14. The method of claim 13, wherein defining a transmission condition

10   includes defining a time when the message is to be transmitted.

15. The method of claim 13, wherein defining a transmission condition

includes defining an acceptable security level for when the message is to be

transmitted.

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16. The method of claim 13, wherein defining a transmission condition

includes defining an acceptable quality of service level for when the message

is to be transmitted.

20   17. The method of claim 13, wherein defining a transmission condition

includes defining an acceptable cost for when the message is to be

transmitted.

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18. The method of claim 13, further comprising receiving the message with an antennae on the portable communication device.

19. A portable communication device comprising:

a memory to store a message;

5   a transmitter having an antennae to transmit the message; and

a processor, wherein the processor is adapted to transmit the message with the transmitter upon occurrence of a user defined event.

20. The portable communication device of claim 19, where in the

10   processor is further adapted to monitor the operation of the portable communication device and determine if the user defined event has occurred.

21. The portable communication device of claim 20, wherein the processor is further adapted to determine if a current time is substantially

15   equal to a time specified as at least part of the user defined event.

22. The portable communication device of claim 20, wherein the processor is further adapted to determine if a current system security level is substantially equal to an acceptable security level specified as at least part of

20   the user defined event.

23. The portable communication device of claim 20, wherein the . processor is further adapted to determine if a current quality of service level is

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substantially equal to an acceptable quality of service level specified as at least part of the user defined event.

24. An article comprising: a storage medium having stored thereon instructions, that, when executed by a computing platform, results in:

5   preparing a message to be transmitted by a portable communication device; and

transmitting the message from the portable communication device upon the occurrence of a user defined event.

10   25. The article of claim 24, wherein the instructions, when executed, further result in transmitting the message from the portable communication device to a base station.

26. The article of claim 24, wherein the instructions, when executed, 15 further result in specifying the user defined event.

27. The article of claim 26, wherein the instructions, when executed, further result in specifying an acceptable quality of service level at which the message is to be transmitted.

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28. The article of claim 26, wherein the instructions, when executed, further result in specifying an acceptable level of service level at which the message is to be transmitted.
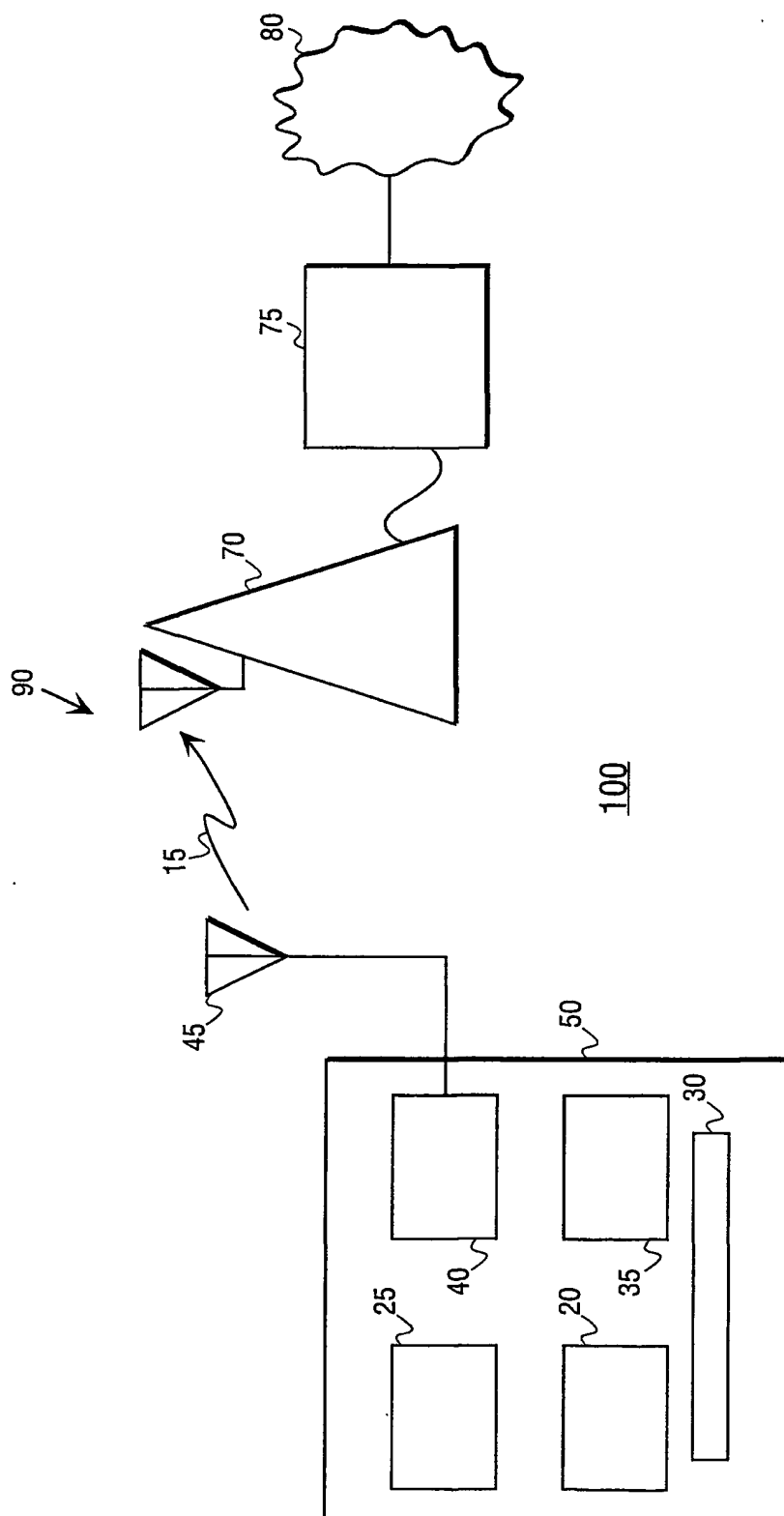
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FIG. 1
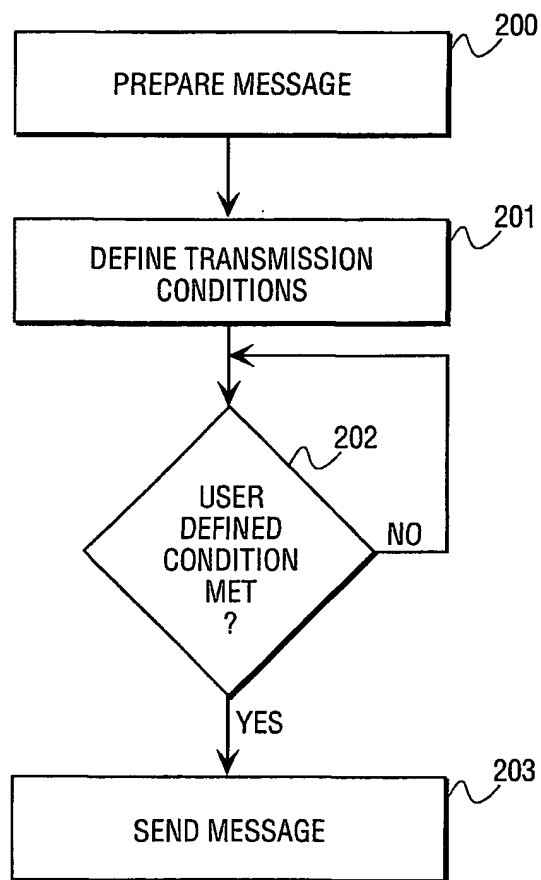
FIG. 2

INTERNATIONAL SEARCH REPORT

onal Application No

PCT/US 02/19719

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7   H04Q7/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7   H04Q   H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 219 694 B1 (LAZARIDIS MIHAL ET AL) 17 April 2001 (2001-04-17) column 2, line 61 -column 3, line 35 column 4, line 39 - line 66	1,3,13, 18,19,24
X	WO 97 41654 A (MCLORINAN ANDREW GEORGE ;TSOUKAS GEORGE JAMES (AU); ERICSSON TELEF) 6 November 1997 (1997-11-06) abstract claim 1	13

☐ Further documents are listed in the continuation of box C.   ☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 September 2002	08/10/2002

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Dionisi, M

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 6219694	B1	17-04-2001	AU	3924499 A	20-12-1999
			WO	9963709 A2	09-12-1999
			CN	1304608 T	18-07-2001
			EP	1096725 A2	02-05-2001
			EP	1096726 A2	02-05-2001
			EP	1096727 A2	02-05-2001
			EP	1098481 A2	09-05-2001
			EP	1124352 A2	16-08-2001
			EP	1126662 A2	22-08-2001
			EP	1206073 A2	15-05-2002
			EP	1082839 A2	14-03-2001
			JP	2002517947 T	18-06-2002
			NO	20005917 A	26-01-2001
			US	2001009015 A1	19-07-2001
			US	2001013071 A1	09-08-2001
			US	2001005860 A1	28-06-2001
			US	2001004744 A1	21-06-2001
			US	2001005861 A1	28-06-2001
			US	2001005857 A1	28-06-2001
			US	2002120696 A1	29-08-2002
			US	2001054115 A1	20-12-2001
			US	2002029258 A1	07-03-2002
			US	2002049818 A1	25-04-2002
WO 9741654	A	06-11-1997	AU	2375097 A	19-11-1997
			WO	9741654 A1	06-11-1997
			EP	0864211 A1	16-09-1998